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ping of limestone a few miles away. Of the six species known to grow elsewhere, four belong to the deserts. But against the connection suggested by this fact is to be set the northern derivation of the two remaining species, so that no satisfactory solution presents itself.

NOTE. Since these notes were written Mr. T. S. Brandegee has published in the 25th volume (series II) of the Proceedings of the California Academy of Science, his valuable paper on the "Plants of Baja California." Mr. Brandegee finds *Delphinium Parishii* on the Californian peninsula from San Enrique northward. Slover mountain therefore becomes its northernmost habitat.

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Notes on North American Willows. V.

M. S. BEBB.

1. SALIX HOOKERIANA, again. During the year 1835, Abraham Halsey, Esq., of Hartford, Connecticut, made a number of drawings for Dr. Barratt, designed to illustrate a work on North American Willows, which was never published. These drawings are now the property of Columbia College, and last summer Dr. Britton—thinking I might be interested—kindly sent them to me for inspection. They represent for the most part the species common about Dr. Barratt's home in Middletown, Conn., but among them I find one of S. Hookeriana, and under this, in Dr. Barratt's own handwriting, the following inscription: "*Salix Hookeriana* Barratt, n. sp. Herb. H. B. & T. no. 9. N. W. Coast from Mr. Scouler"! There is also a crude water-color (not done by Mr. Halsey) obviously worked-up from a tracing of herbarium specimens, and under this a repetition of the habitat and name of collector as given above. No botanist comparing the two sketches with the plate in the Flora Boreali Americana would fail to perceive that all three were drawn from specimens of a single gathering. Than this, nothing could be more satisfactory and conclusive. To Mr. Scouler belongs exclusively the credit of discovering this most remarkable willow, and the Saskatchewan habitat, which has all along held the first place in the books, and is the only one given by Andersson, is shown to have been a mistake from the beginning!

2. S. MYRTILLIFOLIA Anders. Sal. Bor.-Amer. 28. *S. Novæ-Angliæ* Anders. Monog. 160, and DC. Prod., 16. 2. 253, mainly. *S. myrsinites* Hook. Fl. Bor.-Amer. 2. 151, mainly. A pretty little willow found throughout the region of the Canadian lakes from north of Lake of the Woods (Dr. Bell) to Great Bear Lake (Richardson). "Common on the portage of the Grand Rapids of the Saskatchewan, near Lake Winnipeg" (Douglas), Athabasca Lake and river (Macoun), extending westward along streams and in low situations to the eastern foot-hills of the Rocky Mountains. After a careful examination of the collections of Richardson, Douglas and others, upon which Andersson founded his S. Novæ-Angliæ, I am satisfied that (with the exception of Drummond's Rocky Mt. specimens) all belong to one species, for which S myrtillifolia is the oldest (and best) name. It is useless and confusing to attempt to distinguish as varieties the different forms due to varying conditions of locality and exposure. Andersson himself, in the case of Richardson's collections, where aments and leaves of the same plant are under separate tickets, has referred the aments to one of his varieties and the leaves to another. The species is one of the plain from Lake Winnipeg north to the Arctic circle. Drummond's specimens, mentioned above, are more robust every way, with thick, white-woolly staminate aments, fertile immature, leaves wanting, and can not be safely determined, though most likely belonging to *S. monticola* Bebb.

3. S. ARBUSCULOIDES Anders. Monog. 147, fig. 81. *S. humillima* Anders. DC. Prod. 16. 2. 248. *S. acutifolia* Hook. Fl. Bor.-Amer. 2. 150. Arctic America (Mieschring and Dr. Raë). Mackenzies River (Dr. Richardson). Marshes near the Rocky Mountains (Drummond). The sessile capsule, very short bifid style, large emarginate gland and small serrulate leaves constitute a combination of characters so absolutely unique among American willows as to leave no doubt concerning the plant Andersson had in view, nor any as to its very close affinity with S. arbuscula. Prof. Macoun, who examined Andersson's types for me in the Kew herbarium, says that the specimens of Mieschring and Dr. Raë are all on one sheet with no means of telling to which, respectively, the labels belong; that they comprise apparently two or more species and are very imperfect, a few bearing very young catkins. It would appear probable from this that the entire leaf with stipules, figured by Andersson, belongs to some other plant than that from which was de-

rived the essential character of the species. Some of the distinctions noticed by Andersson disappear in Drummond's specimens: the aments are not conspicuously more loosely-flowered than in the European species, the capsules are not smaller and narrower (rather the reverse of this if there is any difference), but on the other hand the aments *are sessile or nearly so*, and the style, though distinct, *is very short*, and the habit is different. I should imagine that any European botanist familiar with the general aspect of S. arbuscula would—if he did not stop to examine closely—be likely to pass the American plant for a form of S. petiolaris, as Andersson himself passed the specimens of Richardson and Drummond in the Hookerian herbarium. In one of Drummond's specimens the leaves are clothed beneath with silky-white appressed hairs, the upper surface smooth and dark-green, making a pretty contrast; in another the leaves are much larger, 2 inches long by ½ to ¾ inches wide and more coarsely crenate. While it is inexpedient to name varieties upon such scanty indications, there is sufficient evidence that the range of variation in the American plant is scarcely less pronounced than in the European S. arbuscula, and, furthermore, evidence which heightens the probability that as between two such variable species, inhabiting areas close to the homogeneous circumpolar flora, the one technical distinction between the two, drawn from the length of the style, may break down at any time. The author of S. arbusculoides can not go back and suppress his earlier name because incautiously compounded of Greek and Latin, and substitute for it (in DC. Prod.) S. humillima. The identification of Drummond's specimens clears up the obscurity which has hung over *S. acutifolia* Hook. (not Willd.), and will afford the basis for an improved characterization of the species. Strange to say, it is upon these old specimens we must still wholly rely. Although not indicated, by either Drummond or Richardson, as rare, the plant has entirely escaped the collectors of the present generation.

4. "S. SUBCORDATA" Anders. DC. Prod. 16. 2. 282. The specimens from which the description of this supposed new species was drawn are all attached to a single sheet in the Kew herbarium; they belong to three distinct and well known species; the name must therefore be dropped. As, one by one, the rarer and more obscure willows of the Canadian flora have been rediscovered by the botanists of the Canadian Natural History Survey—recent collections verifying and ex-

tending our knowledge of the types of the Flora Boreali-Americana—nothing approximating in character to *S. subcordata* And. has been found. Did Prof. Macoun and his associates, and myself as well, fail to appreciate the significance of the description, or was the plant indeed so very rare? In the midst of our bewilderment I asked Mr. Baker for any hint toward a solution of the difficulty which the type specimens might afford, receiving in response a drawing (elaborated from a tracing) of all the specimens on the sheet, all the labels copied and a few fragments, a capsule or two, to show minute characters. This led to the recognition of the corresponding numbers of the "Hooker, Barratt and Torrey" distribution in the Torrey herbarium, so that altogether it is possible to speak with assurance concerning the material which Andersson had before him. (1) Two large specimens of *S. arctica* Pall. (not R. Br.), almost certainly by some mistake ticketed as from the "Rocky Mtns. coll. Drummond," one specimen showing fertile aments past maturity. From these are derived the character of the aments, mainly, and the following: "Adult leaves orbicular-oval, 2′ long, nearly the same width, long-petioled, midrib and nerves acutely prominent, reticulate, margin entire, petioles yellow, buds large." (2) Two stunted specimens of S. adenophylla, leaves only, habitat not given. Here belong "leaves cordate, margin minutely glandular-denticulate, stipules acutely serrate, ornate." (3) Two specimens of *S. cordifolia* Hook., supposed to represent the early state of the preceding. In the Torrey herb. the S. arctica specimen is named "S. obovata var. glabra," the S. adenophylla specimen "S. cordifolia var. serrulata," so it appears Dr. Barratt regarded the two as distinct. How they came to be placed together on the Kew sheet is a mystery, and still more inexplicable is it how so critical a salicologist as Andersson should have been misled into combining the characters of the two in his "S. subcordata."

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